

SH
373
U5
1920





Class SH 373

Book U5

1920

$$\begin{array}{r} 57 \\ \hline 133 \end{array}$$
$$\begin{array}{r} 57 \\ \hline 133 \end{array}$$

2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526

The only places where clams were not found in large quantities were at the mouths of the various rivers and "runs" and in the area within about one-eighth mile offshore. There were certain places, however, where clams were abundant within a few hundred feet of the shore. North of Coon Key there are practically no clams near shore, while from south of Lossman's Run almost to North West Cape they may be found in scattered areas.

ABUNDANCE OF CLAMS.

The most important shallow bars are located off the following places: Coon Key, Rabbit to Pavilion Key, Clam Point, Alligator Point, and Lossman's Run. These bars also comprise the northern and southern limits of the major clam bar.

Over most of the bed clams are found in numbers varying from 5 to 20 per square yard. In some places they are evenly scattered about, while in others they are grouped together closely with intervening barren patches. When they are found in this latter condition the barren patches are never large, usually a few square yards in extent.

The results of detailed examinations of various representative portions of the bed follow:

One and one-half miles northeast of Cape Romano (near Coon Key); depth of water 7 feet.—In a few moments four clams were brought aboard. Clams could be felt with the sponge hook in all places which could be touched from the boat.

One mile south of Coon Key, within a few hundred feet of the Pyramid Light; depth of water 6 feet.—In about 10 minutes eight clams were brought aboard. Clams were plentiful.

Two and one-fourth miles southeast of Coon Key; depth of water 8 feet.—Plenty of clams were felt with the hook.

Off Horse Key, close to shore.—No clams were felt. (In most cases clams were not found within one-eighth mile offshore, but invariably they were found beyond that distance.)

Round Key.—Close to shore very few clams were found. Offshore one-half mile they were plentiful.

Tiger Key and Panther Key, offshore one-half mile.—Clams were plentiful.

Rabbit Key to Pavilion Key.—Between these two keys clams were found to be very plentiful. A bar lies midway between, being fully 1 square mile in area. The pilot, by treading, dug 84 clams in 20 minutes. They were more plentiful, however, than this observation would seem to show, since the water, being about 2½ feet deep, impeded operations somewhat. In a short time 35 clams were taken by fishing from the boat with a sponge hook. They averaged fully 5 to 10 per square yard at this place.

Pavilion Key, offshore one-quarter mile.—Clams were fairly plentiful. Offshore 1 mile clams were very plentiful.

Bird Rock, about 3 miles southeast of Pavilion Key.—One-tenth mile offshore clams were fairly plentiful. Three-fourths mile off Bird Rock clams were very plentiful. Twelve were dug with a sponge hook within a space of 1 square yard.

Clam Point, one-quarter mile south of Bird Rock.—Clams were exceedingly plentiful. Three men dug 300 in 30 minutes by treading. At this point the bottom is exposed in part during very low tides. The bottom is covered with a thick growth of eel grass in which the clams were very numerous. The clams here averaged from 6 to 15 per square yard, ranging in size from those known to the trade as "little necks" to large ones weighing 4 pounds or more. This bar is about one-half square mile in area.

Seminole Point.—Clams were plentiful.

Alligator Point, three-fourths mile offshore.—Here lies a large bar, about 1 square mile in area, whereon, of all places, clams were the most plentiful and accessible. It is here that the few clam fishermen usually operate. Off this

bar two men secured a cargo of 3,500 large clams in two to three tides (8 to 12 hours). It is claimed that from an area of about 10,000 square yards 37,000 clams were dug between May and November, 1918.

Slightly offshore from Alligator Point.—One of the cannery's dredges is claimed to have dug, within an area of about 1 square mile, 250 bushels of clams almost daily for four years. Over this place where the dredge was supposed to have operated, clams were found in quantities sufficient to warrant digging. In fact, it could scarcely be noticed that any clams had been removed, excepting that those found were somewhat smaller on an average than those found in other places. Thus it can readily be seen what enormous quantities of clams may be found off the Ten Thousand Islands.

From Alligator Point to Lossman's Run.—Clams were plentiful. The Ten Thousand Islands and the major portion of the clam bar terminate at Lossman's Run. A few clams were found in scattered areas almost to Northwest Cape.

SOIL.

The soil has a decided influence on the presence and abundance of the clams. Through many tests it has been found that the soil best fitted for these clams is composed of sticky mud in which eel grass thrives. Forty separate tests were made over a distance of 50 miles in order to discover the abundance of the clams and the character of the soil. It was found that of the 10 places where clams were most abundant 8 contained eel grass, while of the 30 places containing few or no clams only 1 contained this grass, and this was very close to shore. As a rule the harder the bottom the fewer are the clams. On an entirely sandy bottom they do not thrive; but they are rather abundant in places containing a mixture of sand and mud. This sticky mud soil usually contains more or less broken shell and is firm enough to keep a person walking upon it from sinking more than a few inches.

WATER.

The water about the islands is muddy, due probably to the currents moving over the muddy bottom. The salinity, at the time of investigation, May, 1919, was very high—the density readings ranging from 1.026 to 1.0292—probably at the highest point of the year, since it was at about the close of the dry season, the rainy season beginning in June or July.

SIZE.

The general size of the clams caught for the canneries is $2\frac{1}{2}$ to 5 inches, measured from the hinge ligament to the point opposite. Judging by the lines of growth upon the shells these clams vary in age from 3 to 7 years. The character of the dredge used in taking the clams is such that very few clams less than $2\frac{1}{2}$ inches in size are brought up. The canneries obtain their stock from the operators of the dredge, none being bought of hand operators.

The clams exhibit two marked types of shell character. About 50 per cent are thick shelled, the valves having thick lips, while about 30 per cent are thin shelled with thin lips. The remaining 20 per cent are rather intermediate between these two types. These distinctions may arise from the presence of two varieties of the species but most probably are due merely to individual variation in the growth of the shell.

DEAD SHELLS.

Dead shells are found almost everywhere on the clam bed. In some places they are very abundant while in others they are occasional. The action of the dredge^a has probably little or nothing to do with this condition for the following reasons:

1. The dead shells are found, in varying quantities, over almost the entire bar.

2. The clam dredge has worked over but a small portion of the bar and in but two localities.

3. Practically all of the shells are unbroken, while many of them would most likely be otherwise had the dredge been responsible.

4. By treading, several hundred clams were dug in a locality where the dredge certainly had never operated. In this locality many dead shells were found. In some cases a single valve was found lying flat on the bottom, while in many cases both valves were found intact, buried in the mud as in life, but dead and filled with mud.

From these facts it appears that the death of the clams is not due to the action of the dredge. The death rate is probably no greater than might be expected on a clam bed where the temperature was such as to permit abundant development of the young and where the tendency would thus be for the population constantly to approach the maximum which could be supported by the available food supply. In such case any sudden lessening of the abundance of food, even though comparatively slight and of temporary duration, would cause the death of a considerable number of clams. Furthermore, the percentage of individuals dying from old age would not be inconsiderable in a population as dense as that described.

SPAWNING.

From a rather limited number of observations it would appear that the clams become sexually mature when about 3 inches in size, probably 2 years of age. According to information received locally the spawning season extends from about May 1 to August 1.

THE FUTURE OF THE CLAM INDUSTRY.

The outlook for the clam industry in this region is very promising. The raw material—that is, the clams—being very abundant and near at hand, and methods having been devised to prepare them into tasty products, the output is only limited by the capacity of the factories^b and the efforts of their sales departments. The clam has never been exploited as has the oyster. There are people living in the interior who have never seen a live clam and know little of its merits. Those people who live on the coasts and anywhere near a section which yields clams invariably prefer them in the shell rather than canned. Canned clam products, therefore, need considerable advertising before they become universally known and ac-

^a The dredge used on this clam bed is quite unlike the usual oyster dredge. It is carried on a large scow or boat resembling a house boat and consists of an elaborate piece of mechanism in the nature of an escalator which projects from beneath the boat with the lower end dragging over the bottom. The clams are dug from the bottom by spikes in an endless chain belt and drawn up a wooden trough or incline into the boat.

^b There are two canneries at present, one being located at Marco and one at Caxambas, both at the northern end of the clam beds.

cepted. But in spite of these facts the factories have been producing thousands of cases annually. A large part of this output is clam chowder and clam juice rather than canned whole clams.

It is quite certain that as long as the dredge works efficiently hand digging for the canneries will not be resorted to again. In order to maintain daily operations the factories must use a dependable and cheap method to obtain clams, for, because of the warm climate, no surplus stock of live clams is allowed to accumulate. It, therefore, can readily be seen that a dependable means of obtaining the clams is of the utmost importance to the efficient and profitable management of the factories.

RECOMMENDATIONS.

At the present time there is no immediate danger of the beds becoming depleted, partly because of the great abundance of the clams and partly because there is but one dredge operating.

There will probably be more dredges in operation in the future and should these be of great effectiveness in digging the clams, it is very probable that sharp inroads would be made upon the most accessible bars. If this condition arises, measures of protection should be enforced, among which the following may be suggested:

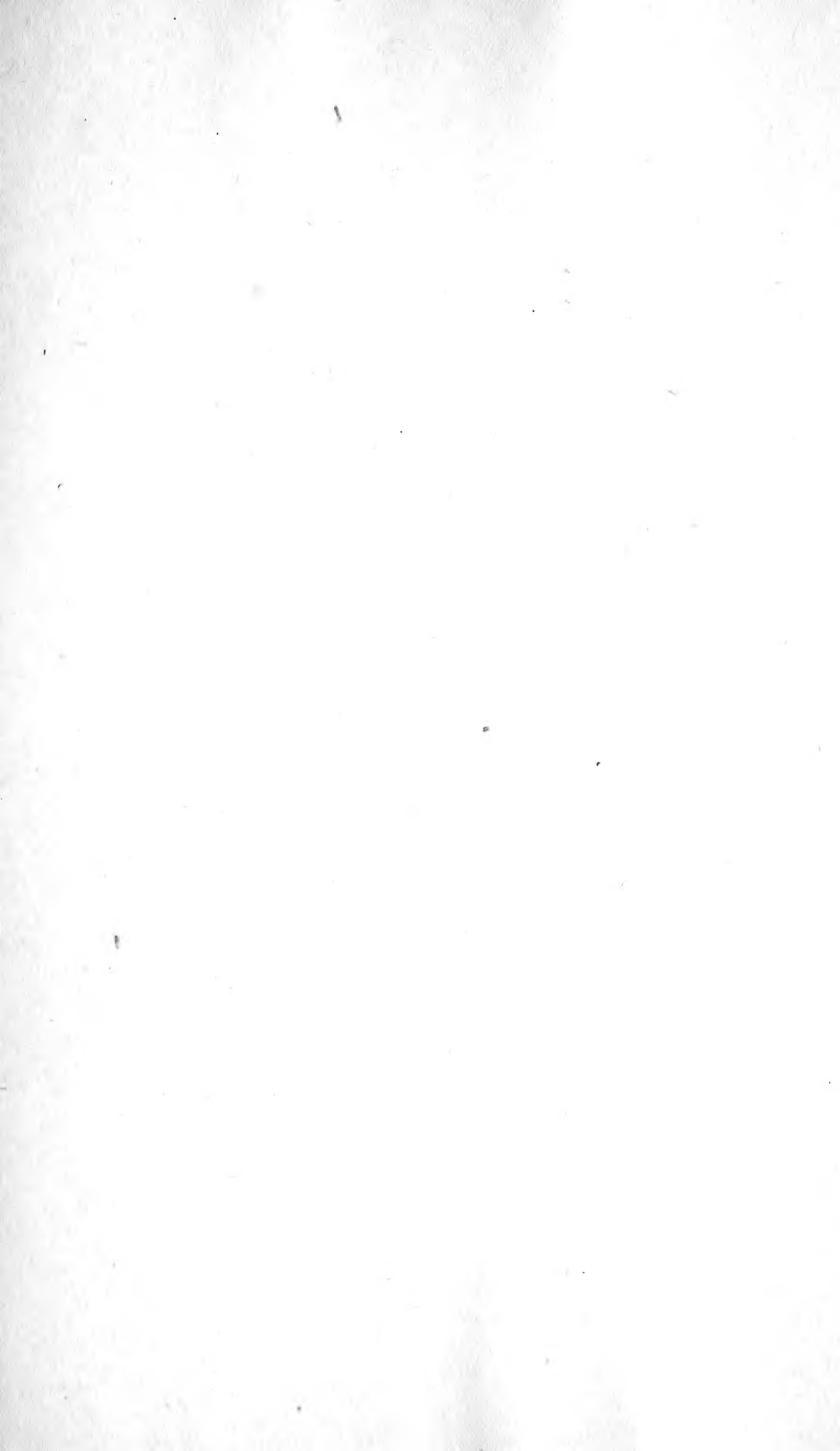
1. The dredges should not be permitted to operate in water less than 8 feet deep, mean tide. The present law of Florida requires that dredges may not operate in water less than 12 feet deep unless in an open sea where hand operators could not work because of weather conditions. In the locality in question practically all of the shallow bars are situated in the lee of the land. The 12-foot law would seem to work too much of a hardship on the dredgers in this vicinity. The bottom slopes very gradually along this part of the coast so that the 12-foot line would be about 5 miles offshore while the 8-foot line would be from 1 to 3 miles from shore. Prohibition of the dredges from digging on the most shallow bars would not benefit the few local settlers to any extent, but it would enable fishermen from near-by towns to "tread" their clams and carry on their own independent businesses as is done by the few Key West diggers. At the present time there are very few clams taken in this manner and for this purpose, but the future may hold some possibilities along this line.

2. The minimum size of the clams which might legally be taken could be increased from 2 to 3 inches, measured from the hinge ligament to furthest opposite point.

3. A closed season might be established throughout May and June, during which time the major portion of the clams are spawning or have spawned and are in poor condition.

4. The catch of each dredge could be limited to a certain number of bushels per day or the operation of the dredge restricted to certain periods of time.

It would not be necessary to enforce all of these restrictions at the same time for should either Nos. 1, 3, or 4 be put into effect beneficial results would accrue. While No. 2 would be of value, the fact remains that at the present time by far the greatest percentage of clams caught are 3 inches or more in size.





LIBRARY OF CONGRESS



0 002 903 560 A